AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (currently amended) A method of forming a material structure on a substrate, said material structure having a pattern containing features having a half-pitch of about 50nm or less, said method comprising:

(A) providing a substrate with a layer of said material,

(B) applying a positive tone resist composition to said substrate to form a resist layer on said substrate, said resist composition comprising (a) an acid-sensitive imaging polymer matrix, and (b) a radiation-sensitive acid generator, said imaging polymer comprising a pendant acid-labile moiety having a low activation energy for acid-catalyzed cleaving,

(C) patternwise exposing said substrate to radiation whereby acid is generated by said radiation-sensitive acid generator in exposed regions of said resist layer,

(D) treating the exposed resist layer with a deprotection reaction-dependent co-reactant at a temperature of about 20-50°C for about 1 to 30 minutes ~~a time sufficient~~ to promote acid-catalyzed reaction in exposed portions of said resist layer but not so long as to cause resolution degradation due to acid diffusion-induced blur,

(E) developing a patterned resist structure in said resist layer by removing radiation exposed portions of said resist if said resist is a positive tone resist, and

(F) transferring resist structure pattern to said material layer by removing portions of said material layer through spaces in said resist structure pattern.

2. (original) The method of claim 1 wherein said material is selected from the group consisting of organic dielectrics, metals, ceramics, and semiconductors.

3. (original) The method of claim 1 wherein said acid-labile protecting group is a moiety selected from the group consisting of ketals, acetals and orthoesters.

4. (original) The method of claim 1 wherein said transfer of step (F) comprises reactive ion etching.

5. (original) The method of claim 1 wherein at least one intermediate layer is provided between said material layer and said resist layer, and step (F) comprises etching through said intermediate layer.

6. Canceled.

7. (original) The method of claim 1 wherein said deprotection reaction dependent co-reactant is present in the polymer film during exposure.

8. Canceled.

9. (original) The method of claim 1 where water is employed as co-reactant.

10. (original) The method of claim 1 wherein said exposure of step (C) is done under anhydrous conditions.

11. (currently amended) The method of claim 9 wherein the treatment~~thermal processing~~ of step (D) is performed in a water vapor-containing

atmosphere having a relative humidity of about 10 to 80%.

12. Canceled.

13. (currently amended) The method of claim ~~12~~1 wherein step (D) is conducted for about 1 to 5 minutes.

14. (original) The method of claim 1 wherein said radiation used in step (C) has a wavelength selected from the group consisting of 248 nm, 193 nm, 157 nm, 13.4 nm, 1.4 nm, and 1.1 nm.

15. (original) The method of claim 1 wherein said radiation used in step (C) is extreme ultraviolet.

16. (original) The method of claim 1 where said radiation used in step (C) is selected from the group consisting of with electron beam and ion beam.

17. (original) The method of claim 1 where the acid labile group comprises acetal, ketal, or orthoester groups requiring water as a co-reactant to form a developable image.

18. (currently amended) A method of forming a material structure on a substrate, the material structure having a pattern containing features having a half-pitch of about 50nm or less, the method comprising:

(A) providing a substrate,

(B) applying a positive resist composition to the substrate to form a resist layer on the substrate, the resist composition comprising (a) an acid-sensitive imaging polymer matrix, and (b) a radiation-sensitive acid generator, the imaging polymer matrix

comprising a pendant acid-labile moiety having a low activation energy for acid-catalyzed cleaving,

(C) patternwise exposing the substrate to radiation whereby acid is generated by the radiation-sensitive acid generator in exposed regions of the resist layer,

(D) post-exposure processing of the exposed resist layer in the presence of a deprotection reaction-dependent co-reactant at a temperature of about 20-50°C for about 1 to 30 minutes ~~for a time sufficient~~ to promote the acid-catalyzed reaction in exposed portions of the resist layer but not so long as to cause resolution degradation due to acid diffusion-induced blur,

(E) developing a patterned resist structure in the resist layer by removing radiation exposed portions of the resist, and

(F) transferring resist structure pattern to the material by depositing the material onto the substrate at spaces in the resist structure pattern.

19. (original) The method of claim 18 wherein said deposition of step (F) is done by electroplating, chemical vapor deposition or physical vapor deposition.

20. (new) The method of claim 9 comprising providing a water-containing atmosphere at about 30 to 60% relative humidity.

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